

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listing, of claims in the application:

Claim 1 (currently amended): A method for recording holograms in holographic storage media, comprising:

propagating a reference beam to a holographic storage medium; and
illuminating a data mask with a beam to produce a modulated beam, the modulated beam incident the holographic storage medium to interfere and record an interference between the modulated beam and the reference beam in the holographic storage medium, wherein the data mask includes an information layer that is divided into multiple data pages, each data page comprising a plurality of data pixels and at least one feature for page-wise error correction upon readout and an image of the information layer is formed having a size substantially equal to an incident surface of the storage medium.

Claim 2 (previously presented): The method of claim 1, wherein holograms associated with the data pages and recorded in the storage medium are separated by approximately 1 micron to 10 mm.

Claim 3 (previously presented): The method of claim 1, wherein holograms associated with the data pages and recorded in the storage medium spatially overlap within the storage medium.

Claim 4 (previously presented): The method of claim 1, wherein an image of the information layer is formed at a plane located outside of the holographic storage medium.

Claim 5 (withdrawn): The method of claim 1, wherein the information layer is propagated to the holographic storage medium with a VanderLugt imaging system.

Claim 6 (withdrawn): The method of claim 1, further including positioning the holographic storage medium near a Fourier transform plane of the data mask.

Claim 7 (previously presented): The method of claim 1, further including positioning the holographic storage medium near a position where the modulated beam is imaged by at least one optical element.

Claim 8 (previously presented): The method of claim 1, wherein the modulated beam is propagated to the holographic storage medium without a lens.

Claim 9 (previously presented): The method of claim 1, wherein the modulated beam is confocally multiplexed to record multiple data masks.

Claim 10 (original): The method of claim 1, wherein the holographic storage medium includes a rectangular card.

Claim 11 (original): The method of claim 1, wherein the holographic storage medium includes a disc.

Claim 12 (withdrawn): The method of claim 1, wherein the data mask includes a lithographic data mask adapted to image the information layer.

Claim 13 (withdrawn): The method of claim 1, wherein the data mask includes a spatial light modulator adapted to image the information layer.

Claim 14 (withdrawn): The method of claim 1, wherein the holographic storage medium includes a polytopic or angle filter.

Claim 15 (original): The method of claim 1, wherein the data mask includes a holographic storage medium having a previously recorded information layer.

Claim 16 (original): The method of claim 1, wherein the data mask includes a holographic storage medium with a plurality of previously recorded information layers having multiple data pages therein.

Claim 17 (withdrawn): The method of claim 16, wherein the plurality of information layers are multiplexed onto the holographic storage medium using at least one multiplexing technique.

Claim 18 (withdrawn): The method of claim 1, wherein a plurality of information layers are multiplexed onto the holographic storage medium using at least one multiplexing technique.

Claim 19 (withdrawn): The method of claim 18, wherein successive information layers having multiple data pages are aligned to define multiple stacks of data pages.

Claim 20 (withdrawn): The method of claim 18, wherein successive information layers having multiple data pages are aligned in a preselected arrangement such that authenticity of the medium may be determined.

Claim 21 (withdrawn): The method of claim 18, wherein the information layers are both polytopic and wavelength multiplexed.

Claim 22 (cancelled)

Claim 23 (original): A holographic storage medium recorded by the method of claim 1.

Claim 24 (currently amended): A data mask for storing information in a holographic medium, comprising:

a data mask having an information layer adapted to be relayed and recorded into a holographic medium, wherein ~~an image of the information layer is formed having a size substantially equal to an incident surface of the holographic medium,~~ and the information layer is grouped into a plurality of data pages, each data page comprising a plurality of data pixels and at least one feature for page-wise error correction upon readout.

Claim 25 (withdrawn): The data mask of claim 24, wherein the data mask includes a lithographic mask.

Claim 26 (cancelled)

Claim 27 (withdrawn): The data mask of claim 24, wherein the data mask includes a spatial light modulator.

Claim 28 (previously presented): The data mask of claim 24, wherein the data mask includes a holographic storage medium comprising multiple information layers.

Claim 29 (withdrawn): The data mask of claim 24, wherein the multiple layers may be stored through one or more multiplexing methods.

Claim 30 (currently amended): A system for recording holograms in holographic storage media, comprising:

a light source; and

a data mask having an information layer adapted to modulate an object beam and interfere with a reference beam for recording an interference pattern associated with the information layer to a holographic storage medium, wherein the information layer is grouped into a plurality of data pages, each data page comprising a plurality of data pixels and at least one feature for page-

~~wise error correction upon readout and an image of the information layer is adapted to be formed having a size substantially equal to an incident surface of the storage medium.~~

Claim 31 (withdrawn): The system of claim 30, further including a VanderLugt imaging system.

Claim 32 (withdrawn): The system of claim 30, wherein the holographic storage medium is positioned near the Fourier transform plane of the information layer.

Claim 33 (withdrawn): The system of claim 30, wherein the holographic storage medium is positioned near the Fourier transform plane of the data mask.

Claim 34 (withdrawn): The system of claim 30, further including a filter at the Fourier transform plane of the data mask.

Claim 35 (previously presented): The system of claim 30, further including a repositioning mechanism adapted to move at least one of the data mask, the holographic storage medium, and an optical element, wherein the optical element is positioned to relay an image of the data mask to the holographic storage medium.

Claim 36 (withdrawn): The system of claim 30, further including an optical element for each data page of the data mask.

Claim 37 (withdrawn): The system of claim 30, further including a phase mask.

Claim 38 (withdrawn): The system of claim 30, further including a 4-F optical system.

Claim 39 (withdrawn): The system of claim 30, further including substantially telecentric optical elements.

Claim 40 (original): The system of claim 30, wherein the data mask includes a holographic storage medium.

Claim 41 (withdrawn): The system of claim 30, wherein the data mask includes a spatial light modulator.

Claim 42 (original): The system of claim 30, wherein the data mask includes a holographic storage material with the information layer stored therein.

Claim 43 (currently amended): A method for recording holograms in holographic storage media, comprising:

propagating a reference beam to a holographic storage medium; and illuminating a holographic master data mask to reconstruct a stored information layer from the holographic master data mask and produce a modulated beam, the modulated beam incident the holographic storage medium to interfere with the reference beam and record an interference between the modulated beam and the reference beam with the holographic storage medium, wherein the holographic master data mask includes a holographic storage material, and the information layer comprises a layer of data divided into multiple data pages that are recorded in parallel, each data page comprising a plurality of data pixels and at least one feature for page-wise error correction upon readout and an image of the information layer is formed having a size substantially equal to an incident surface of the storage medium.

Claim 44 (cancelled)

Claim 45 (withdrawn): The method of claim 43, wherein two or more information layers are stored in the holographic master data mask and multiplexed to store multiple information layers in the holographic storage medium

Claim 46 (cancelled)

Claim 47 (withdrawn): The method of claim 43, wherein the holographic master data mask is imaged with a VanderLugt imaging system onto the holographic storage medium.

Claim 48 (withdrawn): The method of claim 43, wherein the holographic storage medium is positioned near the Fourier transform plane of the at least one information layer of the holographic master data mask when recording onto the holographic storage medium.

Claim 49 (withdrawn): The method of claim 48, further including a filter at the Fourier transform plane of the holographic master data mask when recording onto the holographic storage medium.

Claim 50 (withdrawn): The method of claim 43, wherein the holographic storage medium is recorded in a substantially telecentric system.

Claim 51 (withdrawn): The method of claim 43, wherein multiple information layers are confocally stored in the holographic master, and confocally multiplexed onto the holographic storage medium when recording.

Claim 52 (withdrawn): The method of claim 43, wherein multiple information layers are polytopically stored in the holographic master, and polytopically multiplexed onto the holographic storage medium when recording.

Claim 53 (original): A holographic storage medium recorded by the method of claim 43.

Claim 54 (withdrawn): A method for recording information into a holographic media, comprising:

positioning a holographic storage medium near a quasi Fourier transform plane of a data mask having information to be stored therein;

storing the information from the data mask in the holographic storage medium, wherein the data mask includes a plurality of data pages that are recorded onto the holographic medium in parallel.

Claim 55 (withdrawn): The method of claim 54, wherein placing the holographic medium near a quasi Fourier transform plane includes a VanderLugt imaging system.

Claim 56 (withdrawn): The method of claim 54, further including a filter at the Fourier transform plane.

Claim 57 (withdrawn): The method of claim 54, wherein the holographic medium is recorded in a substantially telecentric system.

Claim 58 (withdrawn): The method of claim 58, further including at least one of Bragg based multiplexing and momentum based multiplexing.

Claim 59 (withdrawn): The method of claim 54, wherein the data mask includes a holographic storage medium.

Claim 60 (withdrawn): A holographic storage medium recorded by the method of claim 54.

Claims 61-120 (cancelled)